

PENNSYLVANIA GEOLOGICAL SURVEY
Harrisburg, Penna.

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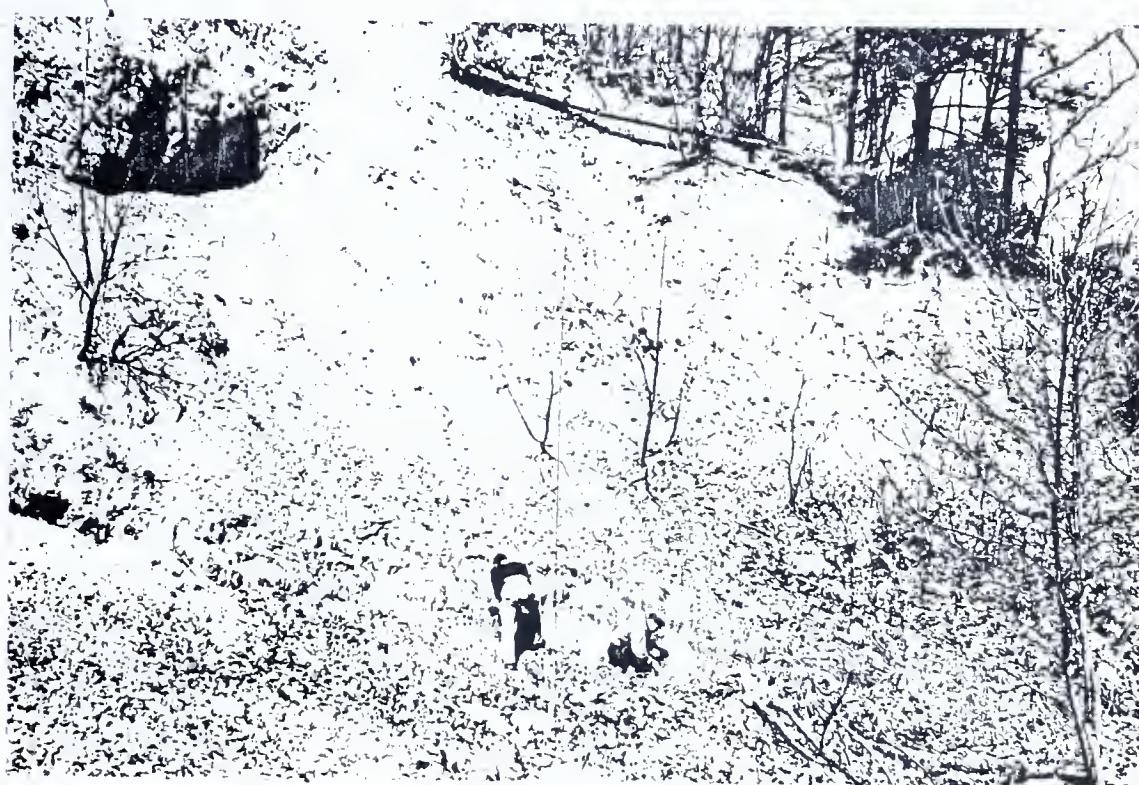
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**FIELD TRIP
GUIDE**

SWATARA GAP

Lebanon County



**COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF INTERNAL AFFAIRS**

Genevieve Blatt, Secretary

ITINERARY

Mileage

Assemble in parking area around Central Dauphin High School

0.0 Proceed on Houck Road to Stop Light and Route 22.

0.4 Turn right on Route 22.

1.3 Martinsburg Formation, interbedded shale and sandstone.

2.6 Buff weathering sandstone and shale.

3.0 On right, massive buff-weathering sandstone, Martinsburg Formation.

3.6 Gray shale, fresh surface; weathers to buff color as seen in last outcrop.

5.6 View of Mandata Gap in Blue Mountain.

An excellent view of Mandata Gap and the Folded Appalachians may be seen. The first mountain is named Kittatinny Mountain or Blue Mountain as it is often called. This ridge is "held up" by the very resistant basal Silurian Tuscarora quartzite. All of the mountains

Mileage

you will see today will be made of tough and resistant rocks; all the valleys are underlain by less resistant rocks. Resistance to weathering depends on many things, such as rock solubility in ground waters, grain size, permeability, density, fissility, etc.

10.8 Outcrops of red and green shale on right. Red color caused by hematite and limonite. Green color may be the result of chlorite or glauconite.

15.5 Overpass over Pennsylvania Route 343.

15.8 Deep cut in Martinsburg Formation: gray shale and thin-bedded limestone. Platy, bluish gray limestones with thin shale partings are a common feature in the Martinsburg Formation of this area. It is non-fossiliferous.

17.5 View of Indiantown Gap in Blue Mountain.

20.0 Turn right off of Route 22; stop at stop sign before turning left on Route 72.

22.4 Lickdale.

24.4 SWATARA GAP

(Bus should unload passengers here then go to mile 30.0, turn around and return to quarry to park.)

Swatara Gap is located 12 miles north of Lebanon. It is a water gap in the first mountain (Blue Mountain) of the Folded Appalachian physiographic province. Swatara Creek may be seen flowing through the gap. This creek was superimposed upon the tough quartzitic bands of rock when the Kittatinny peneplane (of Cretaceous age) was uplifted during Tertiary time. The creek was forceful enough to wear its way down through the rocks, making this prominent gap. Such a gap often represents the location of an old fault or fracture whose path represented the path of easiest access for the stream. Rocks of two ages are in contact here; the Tuscarora quartzite is Silurian in age (360 million years) and the Martinsburg Formation is Ordovician (375 million years). The Ordovician rocks were bedded shales that were greatly warped by the Taconic Orogeny at the end of Ordovician time, so that the Tuscarora quartzite of Silurian age is slightly unconformable on top of the Martinsburg at this location. The rounded structures of shale and shaly sandstone are called storm rollers and some of them may have been formed during an Ordovician storm, which also trapped considerable life. Others may be clay and siltstone concretions which formed from mud balls on the floor of the Ordovician sea. The bedding planes in this quarry are nearly vertical. This is on the south flank of a great syncline whose axis strikes northeast. It is in the heart of the coal fields.

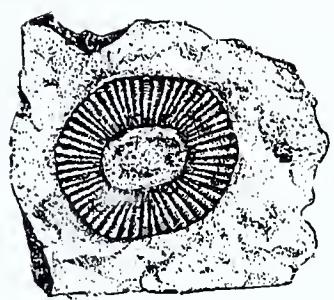
This quarry has produced a large number of late Ordovician fossils;

About 235 feet of fossiliferous beds are exposed in the quarry and along the hillside to the south.

THE FAUNA OF THE MARTINSBURG FORMATION YOU WILL BE ABLE TO

COLLECT IN THIS QUARRY

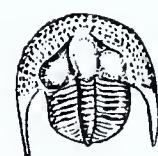
1. Trilobite - *Cryptolithus* (Arthropoda)
2. Orthoceras (Mollusca)
3. Brachipods (Brachiopoda)
4. Gastropods (Mollusca)
5. Graptolites (Hemi-chordata)
6. Crinoid stems (Echinodermata)
7. Bryozoans (Bryozoa)
8. Pelecypods (Mollusca)
9. Ostracods (Arthropoda)
10. Starfish (Echinodermata)



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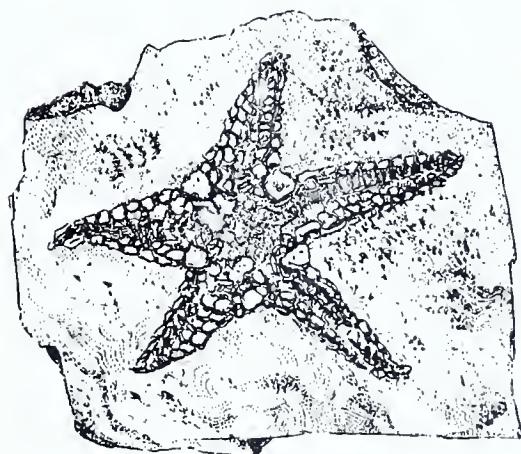
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